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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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STEVEN L. NICHOLS
RADER, FISHMAN & GRAVER PLLC
10653 S. RIVER FRONT PARKWAY
SUITE 150
SOUTH JORDAN, UT 84095

EXAMINER

SPECTOR, DAVID N

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,255

Applicant(s)

GENG, Z. JASON

Examiner

David N. Spector

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/19/2001 through 03/07/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: **DETAILED ACTION**.

DETAILED ACTION

Objections - Abstract

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Objections - Specification

2. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification filed 07/22/2002 is replete with defects/errors and includes numerous terms which are neither clear, exact, or concise. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some of the defects/errors and unclear, inexact, or verbose terms used in the specification are:

(a) solid angles are incorrectly stated in terms of degrees throughout the specification (*i.e.*, *solid angles are correctly expressed in terms of steradians*);

(b) references to patents and other documents are improperly cited by integers enclosed within square brackets, throughout the specification (*e.g.* as "(see [1], [2])", or simply as "[1]");

(c) many of the key points in the specification are included as parenthetical "asides" embedded in the narrative therein; for example "all the (extensions of) light rays reflected by the mirror must pass through a single (virtual) point" (Page 5, Line 29-30);

(d) improper use of the trademark "Nikkor" (Page 2, Line 15) has been noted in the specification; in addition, the term "OMNI-mirror" (Page 5, Line 31) is used as if it were trademark in the specification (*e.g.* "we call such a reflective mirror the OMNI-mirror" (Page 5, Line 30-31). Trademarks should be capitalized wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in

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patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

(e) the numerous subsection headings appearing throughout the specification are confusing in as much as they are all presented in the same typeface as the section headings required under current U.S. practice; moreover, as provided in 37 CFR 1.77(b), the specification of a utility application should include a number particular sections in order, preceded by a section heading which should appear in upper case, without underlining or bold type. Correction is required.

3. A **SUBSTITUTE SPECIFICATION** written in full, clear, concise, and exact terms, and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

Objections - Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "substantially hyperbolic mirror configured to satisfy an optical single viewpoint constraint for reflecting a scene" (Claim 7, Lines 3-4) must be shown or the feature(s) canceled from the claim(s). In particular, the virtual extensions of the light rays reflected by the mirror should be clearly illustrated. No new matter should be entered. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The captions provided for many of the drawings also include a number of terms which are neither clear, exact, or concise. (*e.g. captions provided for FIG. 3 and FIG. 4 are entirely too long, and they contain many of the same types of defects/errors noted above in the examiner's objection to the current specification.*) Appropriate correction/clarification is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Independent Claim 7 is rejected under 35 U.S.C. 112, first paragraph**, because the specification, while being enabling for, *inter alia*, a method and apparatus for simultaneously acquiring omnidirectional stereo image data signals over a solid angle of 4π steradians (Page 3, Line 26-Page 4, Line 3), it does not reasonably provide enablement for “a controller ... to control a display [Emphasis added] of two-dimensional object scenes corresponding to said image data signals” (Claim 7, Line 7-8). The instant specification, therefore, would not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with the instant claim.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (see MPEP § 2173.05(d).)

(a) Independent claim 7 is rendered indefinite, along with its dependent claims 8 and 9, by the use of the phrase “a controller coupled to the image sensor too control a display of two-dimensional object scenes corresponding to said image data signals” (Claim 7, Line 7-8). There is insufficient antecedent basis for this limitation in the claim.

(b) Claim 8 is rendered further indefinite by the use of the phrase “said hemispherical [Emphasis added] image data signal” (Claim 2, Lines 2-4). Here too, there is insufficient antecedent basis for this limitation in the claim.

Claim R ejections - Nonstatutory Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

11. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b). Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. **Independent claim 10 is rejected under the judicially created doctrine of obviousness-type double patenting** as being unpatentable over claims 1-3, 12 and 13 of U.S. Patent No. 6,304,285 (hereinafter '**285**'). Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons.

(a) Claim 1 of the '**285** patent recites "An omnidirectional imaging system comprising: a reflective mirror for viewing objects within a hemispherical field of view from a single virtual viewpoint at the focal center of said reflective mirror ('**285**; Claim 1, Lines 1-4); an image sensor (e.g. a camera) that generates hemispherical image data signals in response to light rays reflected from said reflective mirror ('**285**; Claim 1, Lines 13-15); and a data generator responsive to said hemispherical image data signals for generating three-dimensional data for objects within said hemispherical field of view.

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(b) Claim 2 of the '285 patent recites further recites "said reflective mirror is aligned with the optical axis of said image sensor" ('285; Claim 2, Lines 2-3).

(c) Claim 3 of the '285 patent recites "the reflective mirror is a substantially hyperbolic mirror" ('285; Claim 3, Lines 2-3).

(d) Claim 12 of the '285 patent recites, inter alia, "An omnidirectional imaging apparatus, comprising: a first reflective mirror configured to satisfy an optical single viewpoint constraint; an image sensor optically aligned with said first reflective mirror for generating two dimensional image data signals; a second reflective mirror disposed in a spaced relationship with respect to said first reflective mirror such that a reflective surface on said first reflective mirror faces a reflective surface on said second reflective mirror" ('285; Claim 12, Lines 1-12).

(e) Claim 13 of the '285 patent recites "the first and second reflective mirror are substantially hyperbolic mirrors" ('285; Claim 13, Lines 2-3).

13. Minor semantic differences and the order of presentation aside, all of the features/limitations recited in applicant's independent claim 10 are collectively recited in Claims 1-3, 12, and 13 of the '285 patent as noted above. Independent claim 10 is therefore unpatentable over claims 1-3, 12 and 13 of the '285 patent.

Allowable Subject Matter

14. Independent claim 10 would be allowable, U.S. Patent No. 6,304,285 notwithstanding, if a terminal disclaimer in compliance with 37 CFR 1.321(c) were to be timely filed by applicant.

Other Remarks/Information

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. A number of panoramic and/or omnidirectional imaging systems in-

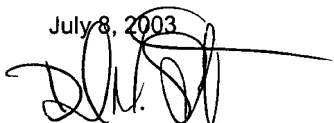
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cluding hyperbolic reflectors arranged to satisfy a single view condition are disclosed in, *inter alia*, Bruckstein et al. (US-5920376-A), Kumata (US-2001/0046080-A1), Wakamoto et al. (US-2002/0141636-A1), Suzuki (US-2003/0007793-A1), and Konolige et al. (US-6545702-B2). Other copending applications by the instant inventor with similar disclosures include, *inter alia*, Geng (US-2003/0081952-A1) and Geng (US-2003/0071891-A1). The instant application was published as Geng (US-2003/0081952-A1).

16. The **STATEMENT CLAIMING SMALL ENTITY STATUS** filed on 06/19/2001 is defective because it is not directed to the instant application (e.g. it is directed to a completely different application (e.g. 09/098,332 filed on 06/16/1998. A corrected statement is required.

17. Any inquiry concerning this communication, or any earlier communications from the examiner, should be directed to David N. Spector whose telephone number is (703) 305-1521. Examiner Spector can normally be reached at this number Monday through Friday between 6:00 AM and 2:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps, can be reached on (703) 308-4883. The fax number for the organization where this application is assigned is (703) 308-7722.

July 8, 2003



David N. Spector
Primary Examiner